

LIVESTOCK AND WILDLIFE: PILOTING INTEGRATION IN AFRICA

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SUMMARY

The paper is centered on livestock and wildlife interaction in Africa, and especially in pastoral areas adjacent to protected areas. Following a brief justification for targeting joint management of livestock and wildlife, the paper identifies the key issues related to the joint management which are direct interactions such as diets, water requirements and diseases, and forces affecting these interactions, such as the development of appropriate institutions and policies for enhancing benefit sharing and pastoral communities rights to lands and resources (including wildlife). The identification of the key issues leads to set up a list of principles to create win-win situations enhancing wildlife conservation and improving pastoralists' livelihoods by exploiting the complementarity between wildlife and livestock.

Key words: Livestock, Wildlife, Integration, Multiple land use, Benefit sharing, Land rights

INTRODUCTION

The interaction between wildlife and livestock is complex. Livestock can have either a positive or negative impact on wildlife biodiversity. Livestock has been often considered a threat to natural resources and biodiversity conservation, and especially to ungulates and other large mammals which share ecological niches with livestock species. But pastoralism and wildlife need not have to be enemies. In fact "the fate of African wildlife and African pastoralism seems to be inextricably linked" (Aveling, 1998). Confronted with the same pressures of various other forms of land use, and especially intensive agriculture, they have to learn how to use the same rangelands. The current paper focuses on livestock and wildlife interaction in Africa, and especially in pastoral lands adjacent to protected areas. It reviews the rationale of developing integration between wildlife and livestock, analyses the key issues and provides principles to pilot such an integration.

Rationale for piloting integration

1 - Wildlife interest and constraints

Beyond aesthetic and cultural values, wildlife has above all an economic importance (Ntiemoa-Baidu, 1997). Actually the economic role is often underestimated and very few comprehensive estimates have been carried out. Chardonnet *et al.*, 1995 calculated the share of wildlife sector in GDP taking into account bush meat production and traditional hunting, tourism and sportive hunting, game ranching and farming (Chardonnet, 1995). As Table 1 shows, wildlife can play an relatively important role, even in countries with relatively little tourism and sport hunting (as Côte d'Ivoire for instance).

Table 1: Wildlife GDP in 1989 for six African countries

| | GDP (1989 \$US millions) | Agricultural GDP (in 1989 \$US millions) | Wildlife GDP (in 1989 \$US millions) | Wildlife share of the GDP (%) |
|---------------|-----------------------------|--|--|-------------------------------------|
| Ethiopia | 5,420 | 2,254 | 5.7 | 0.1 |
| Tanzania | 3,080 | 1,882 | 49.8 | 1.6 |
| Burkina-Faso | 2,460 | 871 | 30.6 | 1.2 |
| CAR | 1,050 | 442 | 25.0 | 2.4 |
| Zimbabwe | 5,250 | 664 | 109.8 | 2.1 |
| Cote d'Ivoire | 7,170 | 3,295 | 101.5 | 1.4 |

source : Chardonnet *et al.*, 1995

In spite of its economic role, wildlife has been deteriorating qualitatively and quantitatively especially in the last two decades. For instance, between 1977 and 1994, wildlife populations outside the protected areas in Kenya were reduced by about 30 per cent (Ottichilo, 1996). According to IUCN, 217 species of mammals are threatened in Africa, which represents 13.8 per cent of the overall number of African mammal species (Chardonnet, 1995).

The establishment of a remarkable network of national parks and protected areas in recent decades has undoubtedly made an important contribution to the conservation of biodiversity and ecosystems. For instance, protected areas have been established over approximately 7.8 percent of Kenya, 27.9 percent of Tanzania and 20.8 percent of Uganda (IUCN, 1998).

Nevertheless, many problems remain. Most protected areas were originally established with little or no regard for local people. The wildlife conservation has tended to be achieved through enforcement and has been relying on guard patrols and penalties to exclude local communities. Neglecting the needs and aspirations of the local people, this style of conservation has led to the alienation of the rural populations and to the development of conflicts of interest with local people (Bergin, 1996; Chauvi, 1996; Pimbert, 1995; Pratt, 1997; Ghimire, 1997).

The failure in excluding the interests of rural Africans has led to new approaches such as the integrated conservation-development projects or the community-based conservation policy (Table 2). The clear objective is to put more effort into integrating wildlife conservation with development of rural communities.

Table 2: Main projects of wildlife conservation in Africa

| Country | Project or program Linked to protected areas | Size (sq. km) | Proximate threats mentioned in references |
|---------------|---|------------------------|---|
| Burkina-Faso | Nazinga Game Ranch Project | 940 | Poaching |
| Côte d'Ivoire | West African Pilot Community-Based Natural Resource and Wildlife Management Project (GEPRENAF) | 8,000 included Burkina | Livestock grazing, agriculture, logging |
| Tanzania | Ngorongoro Conservation Area Project Serengeti Regional Conservation Program Selous Conservation Program Cullman Wildlife Project | 8,000 - - - | Grazing Agricultural encroachment |
| South Africa | Pilanesberg Project | - | |
| Namibia | Caprivi Project | - | Poaching |
| Zambia | Lupande Development Project Administrative Design for Game Management Areas Program (ADMADE); Luangwa Integrated Rural Development Project (LIRD) | 4,840 9,050 | Poaching |
| Zimbabwe | Campfire Program | - | Livestock grazing, poaching, logging |
| Kenya | Amboseli Park Agreement Wildlife Extension Project | 488 | Grazing, agricultural encroachment |
| Niger | Air-Tenere Conservation and Management of Natural Resources Project | 65,000 | Livestock grazing, tourism, poaching |
| Uganda | Lake Mburo National Park Program | | Livestock grazing |

Source: FAO, 1997; Ntiamao-Baidu, 1997; Nikiema et Pavy, 1997; Wells, 1992.

However, listing the major proximate threats mentioned in literature and linked to the selected protected areas presented in Table 2, it appears that livestock are still identified as one of the threats to conservation of wildlife. Actually livestock are only one of the components of environment in pastoral areas, which are often economically and culturally more important than wildlife for the rural communities. Developing biodiversity conservation "with or by the people instead of against or for the people" needs to take into account the expectations of the local communities, including the pastoralists (Murphree, 1996). Moreover, it is recognized that conservation areas as "islands surrounded by wildlife deserts" is not sustainable and that management of wildlife outside the protected areas is also crucial (Boyd, 1999). A great share of all wildlife often exist outside parks, mostly in lands grazed by livestock. These areas represent a critical dispersal zone for wildlife. Therefore, there is a need to have a broader ecological approach including especially the pastoral areas adjacent to the protected areas and integrating wildlife and livestock becomes the challenge.

2 – Role of livestock and constraints

The importance of livestock sector can be estimated through the number of cattle and small ruminants, the ratio of the number of cattle or small ruminant per capita and the share of the GDP (Table 3). In addition to its role in food security and cash income, livestock's importance in draught power, savings and also culture is generally recognized. Animal agriculture is therefore one of the most important components of global agriculture.

Table 3: Livestock per capita and share of the GDP in several African countries

| Country | Human population (x 1000 1994) | Number of livestock (x1000, 1995) | Number of small Stock (x 1000, 1995) | Ratio Cattle and small stock/ inhabitant | Share of the GDP In 1989 |
|---------------|--------------------------------|-----------------------------------|--------------------------------------|--|--------------------------|
| Burkina-Faso | 10,046 | 5,040 | 13,042 | 1.80 | 8 |
| Côte d'Ivoire | 13,780 | 1,488 | 2,227 | 0.27 | 1 |
| Tanzania | 28,846 | 16,626 | 13,637 | 1.05 | 13 |
| Namibia | 1,500 | 3,597 | 6,935 | 7.02 | 12 |
| Zambia | 9,196 | 3,597 | 0,689 | 0.47 | 10 |
| Zimbabwe | 11,002 | 5,370 | 3,080 | 0.77 | 4 |
| Kenya | 27,343 | 14,740 | 12,800 | 1.01 | 11 |
| Niger | 8,846 | 2,358 | 9,370 | 1.33 | 19 |
| Ethiopia | 53,435 | 29,450 | 38,400 | 1.27 | 23 |
| Uganda | 20,621 | 6,500 | 5,400 | 0.58 | 8 |

Source: *WHIO, 1997; Winrock, 1992, CIA World Factbooks, 1997.*

However, increasing demographic pressure and the expansion of cultivation lead to the reduction of the water and rangeland resources and therefore threaten the extensive animal production systems. In the arid and semi-arid zones, there is no stable equilibrium between animal and plant population because of the effect of highly variable rainfall and temperature fluctuations both in time and in space (Behnke and Scoones, 1993; de Haan, 1997). Animal mobility is therefore a key element for sustainability and keeping access to dry season rangelands is crucial for pastoralists and their herds. Moreover, the arid and semi-arid lands are generally ecologically fragile and tend to degrade very fast and become unproductive when put under land use form such as crop production. Actually, these lands are most suitable for wildlife conservation and pastoralism, provided that animal mobility is secured. Therefore, as far as livestock development is concerned, integrating pastoralism and wildlife management may be seen as a good option to optimize land use without developing crop production and, consequently, with securing natural resource access and herd mobility.

3 – The new challenge

Thus, the ever greater pressure on land and resources from growing human populations leads to revisit the vision we can have of the cohabitation between livestock and wildlife.

Several authors have stated that there can be harmony between wildlife and pastoralism (Osemcobo, 1988, Blackburn, 1998). Indeed, pastoralists and wildlife have coexisted in some African rangelands for many hundreds of years. On the other hand, some scientists argue that pastoralists would not enhance conservation. Referring to the scenario of the "pastoral road to extinction" for instance, they prophesy that the growth of the rural populations would lead to the extinction of wildlife if there is no protected areas forbidden to pastoralists (Herbert, 1992).

In the context of changes in land use and land tenure, increasing agriculture encroachment and conflicts over the use of key resources, new technologies, institutional arrangements and strategies need to be developed and implemented to secure rangeland sustainability. The challenge is then how to find the balance between the conservation of natural resources and biodiversity and the development of pastoral communities in order to optimize the use of rangelands and mitigate agriculture encroachment.

Key issues

The model presented in scheme 1 shows how the integrated livestock-wildlife system works and stresses the key issues which need to be resolved in order to find the balance. Key issues are related to the direct interactions between livestock and wildlife and the forces which can affect those interactions.

1 - Direct interactions

Direct interactions are similarities in diets, competition for water, health interactions and predators. The role of the latter is, however, more limited. Direct interactions can be mitigated by alternative technologies which have to be identified to promote "mixed" systems. Community-resource relationship and indigenous ecological knowledge have to be taken into account when developing new approaches. Diet preference is one of the key aspects of the direct interactions between wildlife and livestock. It has been often emphasized that there is a large potential for competition for resources between wildlife and livestock which eventually may lead to exclusion of wildlife (Voeten, 1999). However, it is also known that different types of wildlife and livestock prefer different plant types and there is actually increasing evidence of a grazing complementarity between wildlife and livestock (Blackburn, 1998). Livestock development in some areas may also enhance the increase in palatable species and lead to increase in ecological efficiency (Ottichilo, 1996).

Availability of water, especially in dry season, is also a key aspect of the interaction between wildlife and livestock with impact on degradation of the land. In some ecosystems where water is scarce, it becomes the most important determinant of biomass distribution (Voeten, 1999).

Complementarity or competition for resource use is actually related to the access to key resources. Access to key resources cannot be addressed only at the local (village) level and there is a need for a broader ecological approach at the landscape level. Key resources are linked to different habitats which have to be maintained to increase biological diversity. The monitoring of these habitats is essential in order to quickly detect any changes or disturbances in the habitat conditions.

Health interaction is the last important direct interaction. Transmission of diseases between livestock and wildlife is rampant in developing countries – diseases like bluetongue, rinderpest, foot and mouth disease, anthrax, tuberculosis, Rift Valley fever and trypanosomiasis (FAS, 1998). In general, too little attention has been directed towards studying disease interactions between livestock and wildlife. In a context of increasing pressure from the population and their herds around the protected areas and in order to promote "mixed" production systems including wildlife, threat from disease becomes more important.

2 - Forces affecting the interactions

The second key issue cluster is the set of policy and institutional factors which allow communities to share benefits from wildlife activities and clarify ownership of the communal lands and its resources. Actually, these factors are crucial to the successful coexistence of wildlife and livestock (and people).

- Benefit sharing policy

As the model shows (scheme 1), if there are no benefits expected from a component of the production system, the user will direct his management towards other profitable components. This leads to positive or negative indirect effects on the interactions between livestock and wildlife.

Appropriate benefit sharing policy make people perceive wildlife as a component of the household economy. Many manners exist and have been implemented to distribute benefits to the rural communities (scheme 2).

Through the different channels, various community benefits can be listed: i) direct cash benefits (money donated by tourists, rent revenues, direct revenues distributed by local authorities, NP or private sector), ii) development aid (school, dispensaries, other development project), iii) employment (NP, hotel, tourist guide), iv) drought relief, v) game meat (direct hunting or distribution), vi) assistance from rangers to protect crops and livestock, vii) reduction of harassment from rangers, viii) free permit to pass through the local NP with vehicles or livestock, ix) access to cultural sites.

Benefit distribution can be more or less direct as the scheme 2 shows. In some cases, benefits can be diluted. The new approach is therefore to empower local communities to control themselves the benefit flow from wildlife. Thus, people most affected by wildlife and its conservation become the main recipients and proactive beneficiaries. Strengthening local institutions is therefore requested to assure the successful community management of wildlife resources and the efficient distribution of benefits in a fully transparent and accountable manner.

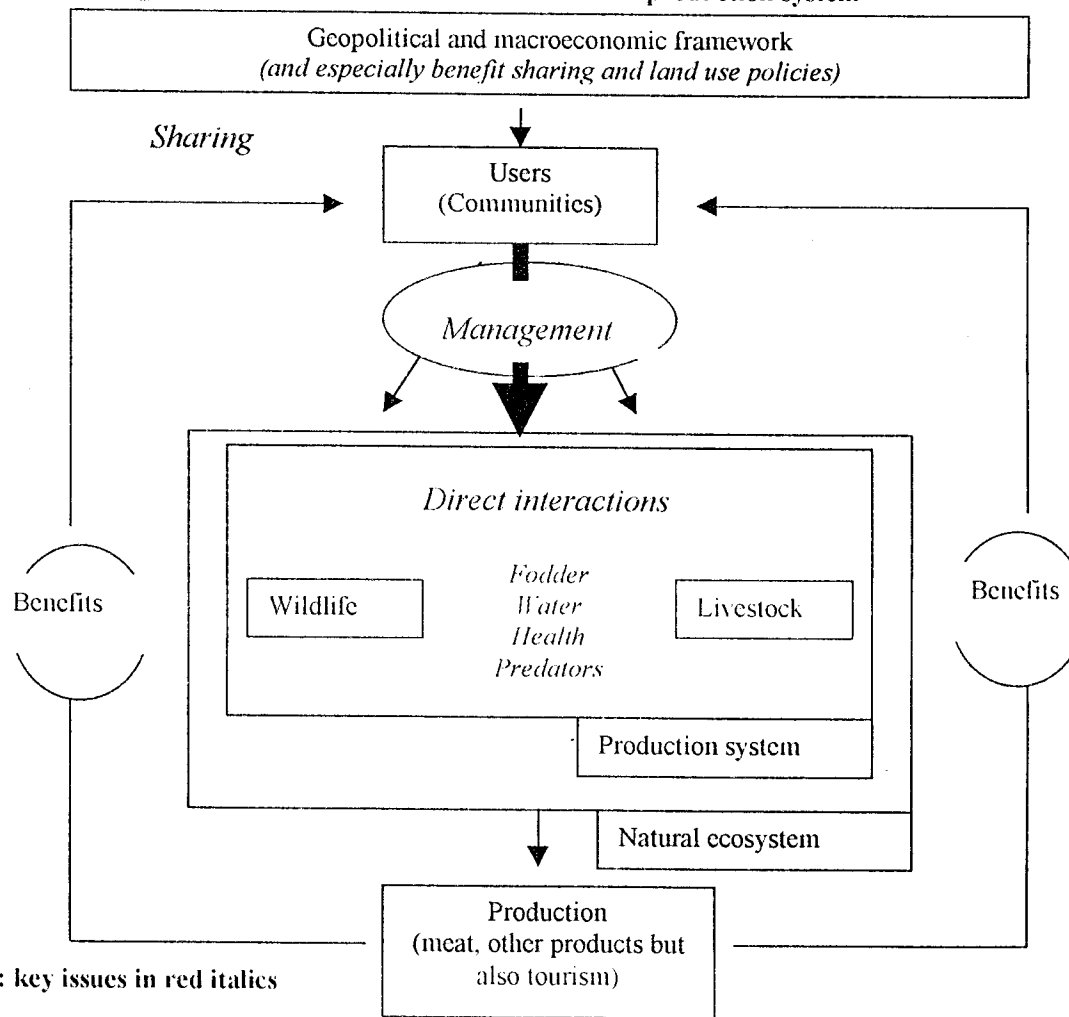
However, in many cases, and especially in the low tourist potential areas of Africa, the economic incentives through the use of the resources by "outsiders" (tourists or sport hunters) are likely to be limited and incentives for conservation may have more to do with continued use and exploitation of resources by local people (Brown, 1998).

Finally, if revenue sharing may influence the will of the local populations to maintain wildlife, it is unlikely to lead them to withdraw from livestock production as livestock play a complex role in the rural livelihoods, which cannot be simply substituted by revenue sharing or other income-generating activities.

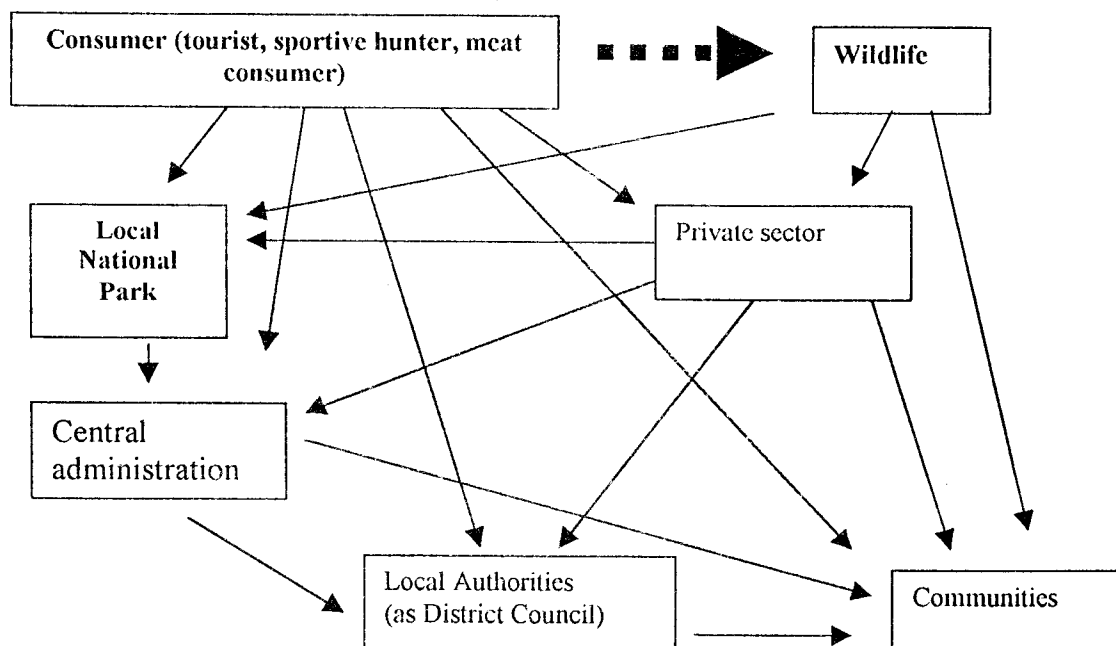
- Pastoral community rights to lands and resources

Addressing land tenure issues and resolving key resource use conflicts is an other key issue for sustainable rangeland management allowing livestock and wildlife coexistence. Actually, it is certainly the most important indirect factor influencing the use of natural resources and biodiversity conservation. Indeed, securing pastoral lands, accessing key resources and restricting the expansion of arable agriculture are major concerns for pastoralists today because of a lack of legal and institutional support. In most pastoralist societies, land is held communally under native laws and customs. The main constraints related to this customary statute are generally: i) absence of comprehensive legal attempt to regulate pastoral land under customary tenure; ii) existence of land law which has been actually centered on agriculture, iii) inherence of the precariousness of the pastoral land rights in the agricultural land law; iv) lack of information on the judicial arrangements of pastoral communities which renders the legislator ineffective; v) absence of uniformity of land allocating bodies, and vi) lack of central control (Tenga, 1996).

Scheme 1: Management of sustainable livestock and wildlife production system



Scheme 2: Distribution channels



The unsecured ownership of pastoral lands and related resources has negative impact on biodiversity conservation. First, because of the precariousness of the pastoral land rights, agriculture encroachment is still increasing leading to reduction in critical dispersal areas. Secondly, many natural resource management technologies take years to give full returns. As pastoralists are not assured that they will get the benefits because of the lack of recognition of their rights to lands and resources, they have no incentives to adopt new rangeland management technologies including wildlife conservation. Therefore, creating a supportive legal and institutional environment is needed to improve the current statute and involve pastoralists in biodiversity conservation.

Towards action

Although there is an increasing impression that wildlife and livestock can be exploited in harmony, many issues related to wildlife-livestock interactions still need to be appreciated and addressed.

According to the key issues mentioned before, the main principles to create win-win situations enhancing wildlife conservation and improving pastoralists' livelihoods by exploiting the complementarity between wildlife and livestock would be as follows:

- Create enabling legal environment that will secure the land access and natural resource (including wildlife) management rights of pastoralists;
- Strengthen institutional arrangements that will : a) enhance active participation of herders in conservation while improving and diversifying livelihoods; b) facilitate land use planning; c) increase participation of herders in community wildlife enterprises (management areas, concessions); and d) improve mechanism for conflict resolution;
- Develop appropriate technologies that will allow : a) rapid, fine-resolution monitoring of livestock, wildlife, land-use and human welfare by herders; b) conservation of natural habitats through appropriate land use planning; c) seasonal movements and extent of grazing range; and d) increased understanding of wildlife/livestock contact, community-resource relationship, local ecological knowledge and practice, inter-species disease transmission and development of appropriate disease control strategies;
- Build capacity among pastoralists through : a) access to better information about possible benefits and best ways to manage wildlife sustainably over the long term, b) active participation in ecological monitoring and collecting of basic information on key species of wildlife, and c) access and use of higher technology monitoring tools and data.
- Build awareness of local and national decision-makers about successful ways to manage wildlife and livestock together in order to optimize the use of marginal lands.

CONCLUSION

With increasing human population and agriculture encroachment, grazing land is becoming relatively scarce for both wildlife and livestock. In order to optimize land use and thwart agriculture development in marginal lands, there is a need to work on enhancing compatibility between wildlife and livestock and propose secured multiple grazing land use.

Based on the analysis presented above, the multi-donor Livestock Environment and Development Initiative (LEAD) is currently developing a pilot project to implement the key principles which would lead to win-win situations in livestock and wildlife integration. The project will be financed by DANIDA, GEF and the French GEF. Three countries have been selected : Botswana, Chad and Tanzania.

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